CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2000

DateRun: 11/29/2000

Experimenters: Jason Marshall

ClientType: Chemical Company

ProjectNumber: Project #1

Substrates: Stainless Steel

PartType: Part

Contaminants: Latex binder

Cleaning Methods: Ultrasonics

Analytical Methods: Timing

Purpose: To clean supplied part using most effective cleaner from previous trials.

Experimental Procedure: Three and a half liters of a 5% solution of Buckeye Shopmaster was heated in a VWR Scientific Products Aquasonic 150 HT ultrasonic tank to 130 F. The flow through the dirty mixer was measured by recording the time it took for 200 ml of water to pass through the tube. Once the flow was determined, the tube was placed into the ultrasonic tank and cleaned for 3, 6, 10, 12, 20, 30, 45 and 60 minutes. After each cleaning time, the flow was recorded after the mixer was rinsed with a tap water spray for 15 seconds at 120 F. Water was also evaluated using a Crest 25kHz ultrasonic tank at 130 F for 6, 12, 30 and 60 minutes

SUBSTRATE MATERIAL: stainless steel static mixer tube
CONTAMINANTS: Latex binder (water 53.648%, Vultex CA-1 catalyst 0.724% (7664-41-7), Igepal CO-630 0.545% (9016-45-9), Biosoft D35 X 2.595%, Dur-O-Set NS 25-1823 24.447% (50-00-0), Fulatex Polymer 12.663%, Black pigment BS 15870 5.478%(1333-86-4), Repearl F-8025 0.900% (57-55-6)

Results: The static mixer flow rate improved over the first 30 minutes of cleaning increasing from 10.8 mL/sec to 22.2 mL/sec. The tube also was visible cleaner after the first 20 minutes of cleaning. The flow did level off after the 30 minute peak, but the outside of the mixer did continue to look cleaner after 45 and 60 minutes of cleaning. The flow rate of the water showed no major improvement over the 60 cleaning cycle. Despite the lack of flow increase, the mixer was definitely being cleaned. Table 2 lists the calculated flow rates for each cleaning interval.

Table 2. Flow Rate of Mixer

Time	Flow Time	Flow Rate Buckeye	Water
minutes	seconds	mL/sec	mL/sec
3	14	10.8	
6	14	14.3	25.7
10	16	14.3	
12	19	12.5	24.3
20	9.1	22	31
30	9	22.2	31.5
45	9.4	21.3	
60	10.2	19.6	29.6

Summary:

Substrates:	Stainless Steel
Contaminants:	Latex binder

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Buckeye International	Shopmaster	5	0.00	☑	
Water	Water	100	0.00	☐	

Conclusion: Ultrasonic cleaning with Buckeye appears to improve the flow rate through the static mixer after 20 to 30 minutes. Visual observations provided proof that cleaning was still improving beyond the 30 minutes even after the flow rate leveled off. Cleaning using water didn't increase the flow, but did result in a cleaner looking static mixer. Both parts have been sent back to the client for in-house evaluation.